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The Duration of the Contagious Period in Foot-and-Mouth Disease.

By DR. G. LEBAILLY, Director of the Bacteriological Laboratory, Caen, France.

The classic treatises and current opinion agree in recognising that foot-and-mouth disease is contagious during a period of several weeks.

The sanitary police regulations also impose a quarantine for at least fifteen days after the recovery of the last case of foot-and-mouth disease seen during an outbreak. But it is very important, in the struggle against the disease, to determine as exactly as possible the length of the period during which the affected animals are capable of transmitting the disease.

This knowledge has also a great interest for the experimentalist.

The experiments, the results of which I am going to relate, have been made in a stable, principally on bovines of the Normandy breed, young and adults, excluding cows during the period of lactation, on which, for material reasons, I have not been able to experiment.

The virus I used came from an outbreak near Caen, collected during an epidemic in December, 1920. This was kept active by passing through susceptible animals. The disease caused by this virus appeared on the third to the seventh day; if, from the time when the temperature began to rise, until the rupture of the vesicles, I placed in contact with the sick animal a susceptible one, that one invariably contracted the disease; the temperature rose at the end of forty-eight to seventy-two hours—in fact, a classic infection.

If, on the contrary, I let four days elapse after the appearance of the first vesicle, which usually follows close after the initial rise in temperature, and is shown by the appearance of dribbling saliva, and at this time I placed in the stable a susceptible animal, that one did not become infected. Yet the contact with the sick animal was perfect, both being tied to the same ring for six hours, eating at the same rack and in the same manger, drinking out of the same trough, and sharing the same bedding, the fresh animal continuing, after the six hours of actual contact, to occupy the same stall as the infected one. Finally, no disinfectants of any kind were used. My stables are the same kind as those on the farms where the disease had run a full course; my animals were exposed to contagion, and had every facility for getting the germs of foot-and-mouth disease from the walls, woodwork, and the remains of the bedding which had been left from days before.

On the other hand, the sick animal showed, during this period of contact, the lamentable and classic symptoms—the ulcerated vesicles partly covered with a grey coating, shreds of epidermis still coming away, a frothy foam from the mouth and the customary smacking of the lips.

The usual opinion is that at this stage of the disease the animal is very infectious, that you must disinfect him and anything that he may have soiled.

But, for the past eight months, in the places where I experimented I have completely given up the use of disinfectants. My new animals are placed in the stables of the infected animals from the fourth day after the appearance of the vesicles. For all that, I have never under these conditions observed a case of infection.

Needless to say my new animals were very susceptible to infection, proved fifteen days to a month later by inoculation of virus, or by direct contact during the virulent stage of the disease, when they are always infected.

In the evolution of foot-and-mouth disease, it appears that we can distinguish two stages or periods, the first stage very dissembled and impossible to ferret out by observation, and so much the more to be feared, because one cannot discern it except on looking for a rise in temperature.

From the commencement of this rise in temperature, no matter if only a few tenths of a degree, the animal can spread the contagion, wherever it passes, and passes the disease unsuspected to others, which dispose it in like manner.

The second period, on the contrary, that which strikes and attracts the attention of the least observant, does not deserve that fear which it inspires.

This stage of the disease is the most painful for the animal, but when they have discharged saliva for four days they are incapable of transmitting foot-and-mouth disease.

The conclusion to be drawn from my experiments, is that the propagation is done by sick animals only during the periods of incubation and invasion, during a very short time.

These undeniable proofs explain the powerlessness of sanitary measures applied when the epidemics have already developed, such as those measures which appear to be the most stringent, as compulsory

slaughter, which can do nothing better than the observing and isolation of the first foci of the disease.

During the periods of epidemics one must distrust less the animals which have been salivating for four days, for they are harmless, since the virus of the disease dies on the spot, but, on the contrary, on those which appear healthy one ought to impose a quarantine of fourteen days before placing them in a healthy herd. (Extracted from *Recueil de Médecine Vétérinaire*, August 22nd.)

Regarding the conclusions arrived at in the above report, Captain Henry Simpson, F.R.C.V.S., Government Veterinary Surgeon, Penang, writes:—

Dr. Lebailly has revolutionised the existing theories regarding foot-and-mouth disease, and it will be interesting to have the opinion of those who are closely associated with the disease, both bacteriologically and in practice. The data of the recent outbreaks in Great Britain should afford either an agreement or divergence of opinion as to the relative merits of the carriers of infection, and the anticipated report of the Board of Agriculture on the experiments carried out on an obsolete battleship should go far to prove or disprove the conclusions arrived at by Dr. Lebailly.

In the Colonies I think it will be found that up till now the collective opinion of Veterinary Officers has been that the clinically-affected animal is the great source of danger—it is a danger that is at once apparent—the "in-contact" animal is also recognised as a danger, but it is an insidious danger and it is assumed that a 14 days' quarantine dispels this, but one does not know where all the in-contact animals are, and the danger is that all "in-contacts" have not been included.

The theories of Dr. Lebailly, if accepted, will upset all the present sanitary precautions taken against the spread of the disease; under these theories it is only affected animals that will be safe on transport routes.

Up to the present the Colonial Veterinary Officer has regarded the clinically-affected animal as the main carrier of disease and the "in-contact" as a secondary one.

I trust that information will be forthcoming, either approving or disproving Dr. Lebailly's conclusions. It will be welcome to those of us who are in constant touch with the disease and its attendant disorganisation of transport.

The National Pony Society has decided that the height of ponies (mares and stallions) admitted to the National Pony Stud Book should be in future not exceeding 15 hands, with shoes on, half-an-inch to be deducted if presented for measurement unshod.

The Bromley Town Council, at a recent meeting, rescinded by 13 votes to 7 the by-law previously made making compulsory the use of mechanically operated slaughtering instruments.

Some Clinical Reminiscences.

By F. C. Hobbs, M.R.C.V.S.

Presented to the Mid-West and South Wales Veterinary Association, October 12th, 1922.)

This paper is in reality but a collection of reminiscences, for there was no orthodox method used in preparing it. It is a simple record of cases that at the time they took place appeared unusual, and not of every-day occurrence in a busy practice.

I have given some of the cases, perhaps, fancy names, because I did not know what else to term them.

Drinking Diabetes.

Subject.—A four-year-old cob, turned to grass, was noticed to be doing badly and wasting in the summer. He ought to have been in good condition. The owner said that he would lie down at times, then get up and graze for a while, and then walk around in an aimless manner.

He was brought to our stables and kept under observation. Temperature averaged daily about 103°; pulse, 55; respiration not much increased; mucous membranes infected; fæces small and hard.

He developed a great thirst, and would hunt about the horse box for any moisture, he would even lick his urine from the floor. The appetite was very poor, but he had a perpetual thirst, and it was a pitiful procedure to rattle a bucket before him.

Treatment.—We first tried to remedy the evil by giving him only liquid food—boiled linseed and mashes, and hay tea. This caused a relaxation of the bowels. We gave iodide of potash, chlorate of potash, tonics and milk. He would not touch hay, oats or dry bran. This lasted for about three weeks, but he still wasted and his thirst was not appeased.

We then adopted the method of giving him a large quantity of water, but no matter what amount we gave him he still wanted more. The bowels were very relaxed now and eventually he was found dead in the box.

Post-mortem.—We searched carefully for worms, but I confess that beyond the fact that the liver appeared unusually pale, and the kidneys the same, I could not connect the symptoms with anything I saw at *post-mortem*. I think the whole trouble started in the brain.

Fern Poisoning in Cattle.

History.—Two yearlings had died on a farm; one was found dead and the other ill, but died two days later. The owner had attempted treatment by giving salts and linseed oil.

Two days later two more were taken ill and brought down to a shed where I first saw them.

Symptoms.—Sunken eyes, slight blood from nostrils, diarrhœa—very much bloodstained. They would lie down, with their heads back to the side, and grunt; when aroused they would soon lie down again. Temperature 104°; ears cold. They died in three days after appearing ill. There was not

much tympany, and I found it unnecessary to insert the trochar and cannula into the rumen.

Post-mortem.—This showed the rumen half full of masticated food; the mucous membrane was easily removed. Reticulum contained dried food. The fourth stomach showed petechial hæmorrhages, but what was most noticeable were the intestines, which were practically filled with blood, and their outside appearance was much like that of a black pudding. The lungs were congested, the heart showed petechial hæmorrhages, kidneys soft, spleen normal.

I walked over the fields where the cattle had been grazing, which was on a bank where an abundance of fern grew. The grass was scanty, for it occurred in August, 1921. The animals had bitten the tops of the fern off in many places. They were taken from this field immediately after the first had died, and were under continuous observation. Another animal was taken ill exactly three weeks after being removed from the fern land to the low land where no ferns existed.

Treatment.—Milk, eggs, linseed gruel, stimulants and chlorodyne—but not one subject recovered after showing illness.

A Severe Injury to Dog's Upper Jaw.

A client brought a favourite dog (terrier) to my surgery one afternoon. The animal was bleeding profusely from the mouth. The owner said he had come in contact with the wheel of a motor lorry.

The front of the upper jaw was literally smashed to pieces; the lower jaw was uninjured.

I suggested destruction, but the owner would not hear of it, therefore I had to make the best of a bad case.

Treatment.—Upon the jaw was placed a wool pad soaked in anæsthesine—I also injected the same local anæsthetic wherever I could and waited five minutes. Then I removed all loose bone, teeth and gum, which numbered seven pieces; in fact, the front part of the jaw was completely removed, the upper lip being preserved.

The terrier was taken home and given milk and water for a week; no further treatment was adopted and the patient made a good recovery. His appearnow is that of a bulldog, with a protruding under jaw. The little animal is such a "sport" that his deformity does not stop him from killing rats.

Chronic Purpura.

I have given this case the above name on account ot the length of time the disease existed in a four-year-old colliery horse.

He had been tested for glanders, and would have gone to the colliery but for bad trade and a dispute. My attention was called to him because his hind legs were swollen.

Symptoms.—He was not off his food. Temperature 103°; pulse 50; respirations not increased. I prescribed diuretic powders mixed with mash, and exercise. The swelling in the legs subsided in about a week, but a swelling as large as a dinner plate occurred on his near side over the ribs. When I saw him again on account of the swelling over the ribs his hind legs were not swollen, he did not appear distressed, and there was a slight extravasation of blood—one spot in the eye and another in the mucous membrane of the nose. The swelling on the ribs subsided in a few days, then an off-fore limb became swollen up as far as the elbow, where it ended somewhat abruptly. The owner reported that in five days the swelling went out of the limb, and he thought the animal was better. A few days later a swelling occurred on the near side of the neck which followed the same course as the other swellings. The animal never refused food and did not lose flesh. As the weather was warm we turned him into a field; he would graze well and appear healthy except that the swellings would come and go, firstly one leg, then another, then any other part of the body being affected.

Treatment.—I placed him on iron tonics and quinine in drenches given night and morning for a week, but there was no improvement. I then gave him six hypodermic injections of anti-strepto- and anti-staphylococcic serum, one each day; on two occasions the swelling occurred where I inserted the needle. There was no improvement, so I decided to keep him on grass, oats and tonics. He took the food mixed with powders quite well, but no improvement occurred in a month and the animal was given away.

I saw him a month later when he was very poor and his near hind leg was much swollen. A wound about three inches in diameter was seen on the outside of the fetlock. I told the owner what trouble we had with him and he decided to send him to the knackers. Over four months had elapsed from the time I first saw him. The disease appeared to assume a chronic form from the outset.

Dislocation of Cervical Vertebræ.

A trotter pony, eight years old, belonging to a fish salesman, was cast in a stall during the night. I received a message at 8 a.m. in the morning, and on arriving at the stables I found the animal still down on his left side with his head pulled back towards his off-hind leg by a chain attached to the head collar and fixed in the manger. The outer calkin had become embedded in one link of the chain.

With difficulty we released him, and he lay flat on his side for some time. Having obtained help we lifted him to his feet, and as long as we supported his head and kept his neck straight he could stand; if we let his head go he would fall.

The owner was willing to go to any expense to save him. We secured the head by means of pillar reins to both sides of the stall and supported same on a sack of hay placed on a box to the required height. We kept two men with the animal for two days and nights, gave him water out of a shallow bowl, and food by the hand at intervals. The animal made a good recovery and won more matches.

I based my diagnosis on the fact that if the neck was kept straight the animal would stand, but,

released, he would fall immediately to the ground. I could push the neck out at will.

Azoturia on a Farm.

I must confess that I was, in the early part of my investigation of these cases, entirely at sea.

History.—One cart horse dead; one cart horse down in the stall dying. The owner suspected foul play. He stated he had a German working for him and he could not get on at all well. This man had left suddenly the night before and had not returned to the work on the morning the death occurred. Furthermore, about a pound of calomel was found in the room occupied by the German. The packet was labelled and the chemist's name was on the label. This was the history, and I must confess looked very suspicious of poisoning.

I made a *post-mortem* of the dead horse, but with the exception of congestion of the various organs of the body there was nothing conclusive. The stomach was somewhat inflamed and there was about a cup full of coffee-coloured urine in the bladder. I sent the stomach and contents, and part of intestine and contents to the Royal Veterinary College for analysis, and in due course a report came back that no mineral poison was discovered.

The horse that was down and dying in the stall showed very little to help me. He was sweating and struggling, as we find them during their death agonies, galloping away to death.

I satisfied myself that there could be no outside poisoning, for the animals had not been turned to grass. The corn was good and plentiful, and the owner said that he was expecting to take over a colliery haulage contract in a fortnight. Of this statement, Gentlemen, I ought to have taken more notice, but I could not get the idea of poisoning out of my head.

Treatment.—There were eight horses on the farm, and they were in good condition. We lowered their diet, which consisted of bran, oats, beans and chaff, and gave laxative medicine. No further cases occurred until about a week afterwards, when I heard from the R. V. C. Laboratory. I was on the farm when the milk boy came up with his pony, stating that his pony was going like the rest of the horses that died. On my examination of this one I had no difficulty in diagnosing the disease. The muscles of the quarter were hard; he passed coffee-coloured urine and was sweating—in fact, a typical case of azoturia. We got him into the stable, gave him fever mixtures, hot fomentations to the quarter, and a physic ball. He soon recovered.

First Rib Fracture.

History.—Called, on passing, to examine a cob belonging to a butcher. He had dislocated his shoulder and a bone-setter had put three ligaments back in that shoulder—that is what I was informed by the owner.

I examined the cob in a loose box. He was standing on three legs, the near-fore was extremely flexed and the elbow dropped, in fact the leg seemed to me that it was just suspended from the thorax. One could just get the animal to move, which caused him great pain. On lifting the leg a little from the ground, one could flex the fetlock, knee, and to a certain extent the elbow, but on attempting to move the shoulder the animal would nearly fall, so intense was the pain, and I could not detect any abnormality of the shoulder joint. Therefore I discredited the replacement stated above.

Diagnosis.—Fractured first rib; I advised slaughter. The owner doubted my opinion to a certain extent, but informed me that he had got him insured, and asked whether I would report to the Company—which I did. The animal was slaughtered and taken to the knackers.

I met the owner's son at the knackers' yard, and the knackerman presented the owner with the fractured rib.

Multiple Abscesses of the Spleen.

A cob mare, eight years old, had worked regularly until a month ago, when she went off feed. The owner tried several remedies, but still the animal would not eat, and consequently wasted.

When brought to our stables she suffered from abdominal pain; pulse 60; temperature 105°; frequent micturition.

I examined her *per vaginam*, passed a catheter, but found nothing abnormal. Next I examined her *per rectum* for calculi of the bladder—nothing abnormal detected. Examined her *per rectum* as far as I could reach and noticed that when pressure was placed towards the abdominal wall the animal would crouch with pain. I stripped to the waist to enable me to reach farther, when my fingers just touched what appeared to me to be the edge of an enlarged scirrhous liver. I pressed it away from the abdominal wall, causing great pain, and I came to the conclusion that I had an enlarged liver to deal with. The prognosis was unfavourable and animal was destroyed.

Post-mortem revealed a very enlarged spleen covered with multiple abscesses. The whole structure appeared altered, and localised peritonitis had occurred where the spleen became attached to the abdominal wall. The pus of one of the abscesses was examined for tubercle bacilli, but none were discovered.

Severe Injury to Penis of Stallion.

During service a stallion met with an unusual accident. After leaving a mare he was kicked on the middle of the penis. The organ began to swell immediately, and when I saw him two hours later the penis was pendulous, hanging outside the sheath, and could not be withdrawn. There was a laceration about the middle and to the left. We could not return the penis on account of its size.

Treatment.—Advised hot antiseptic fomentations, bran mashes and fever drinks. The next day the penis was of greater size and the scrotum much swollen. The animal took the mashes, but was

restless, standing first on one hind leg and lifting the other, and then *vice versa*. At the end of a week I lanced the bruise and obtained some clots of blood and a serious exudate. Fomentations were continued. Subsequently a large growth occurred at the seat of the bruise, while the penis itself became much smaller, but could not be withdrawn. The owner would not consent to the animal being cast.

I applied a clam to the growth; this was successful in removing it in about ten days. The clam was discovered in the box one morning. This left a fairly large wound which was dressed daily with dry dressing. Later, I re-applied the clam to a part that I could not fix with it on the first occasion. The clam came away again in ten days. Eventually the wound healed and the penis was withdrawn.

This season the animal has served his *quota* of mares, and I am waiting to know if they are in foal.

Fractured Tibia.

The owner of the stallion eight years ago had one of his horses kicked on the inside of the hind leg, midway between the hock and stifle. He did not think much of the injury as the animal was only slightly lame. He dressed the wound, which was small, and next day sent the animal four miles, working in chains to Newport with a load of hay. Frost had occurred the night previous, and the ground was slippery in places.

On arriving home at the farmer's own gate, the animal went dead lame. I was sent for. I found a wound offensive in character and the animal standing on three legs, sweating and greatly distressed. Fracture of the tibia was easily detected and the animal destroyed.

Cow Choking.

Called at 12.0 p.m. one night to a dairy cow that had been fed with swedes cut into finger lengths.

I found the animal showing the usual symptoms—salivation, tympany, etc. Attempted to pass probang and met with obstacle about two-thirds down the neck. Considerable force was used in attempting to force the obstacle into the stomach. I failed and feared that I should rupture the œsophagus. It being so late at night slaughter for food was out of the question, therefore we decided to insert trocar and cannula to prevent immediate suffocation and I said I would call there again in the morning and, if not successful, would have her killed for food. The cannula was sutured to the skin. The next morning the animal was quite alright, having passed the obstacle during the night, and I removed the cannula.

Kitten with Lady's Hat-pin in Her Body.

A small kitten, brought to my surgery, had fallen down-stairs, and the owner pointed out to me what appeared to be a piece of bone under the skin of the neck. To the feel it seemed like a spicule of bone. There was no wound about the body anywhere. I held chloroform on cotton wool near the nose and the animal was anæsthetised in a few minutes. I cut down on to the obstacle and found the point of a needle. This I held with a pincers and you can imagine my surprise when I withdrew a lady's hat-pin, which was nearly the length of the kitten.

The kitten was taken home and returned every day for a week. He showed no inconvenience at all at any time. The pin had the usual knob at the end and must have caused considerable damage to internal organs on its passage from the body.

Ruptured Uterus: Twin Calves.

I was called one morning to a cow about to calve. The owner stated that he had found her down in a field in the early morning although she was quite all right the night before.

With difficulty he brought her down to the shed; she would go a few paces, then lie down. On arriving, I found the animal standing. She was a great size, but did not seem to be near calving, and had a month to go. I examined her *per vaginam*. The os was quite closed. I could feel a live calf in the uterus.

As to the swelling, that appeared general (there was only slight tympany, which was relieved with trocar). I came to the conclusion that I had probably twins to deal with and a dropsical uterus.

Treatment.—I felt quite helpless and decided to wait and see. The next day the condition was unaltered, the *os uteri* still closed, and the animal off feed. She would lie down at times, but was able to get up. She did not appear to be in much pain.

The next day she was down on my arrival, grunting badly, with sunken eyes—in fact, dying.

Post-mortem at Hunt Kennels.—The huntsman had removed the skin before I got there, and in slicing into the abdomen, a large calf, apparently healthy, and an enormous quantity of water (blood-stained) flowed from the abdomen. The calf was outside the uterus and peritonitis was in evidence everywhere. On taking out the uterus another calf was discovered; this one had been dead about a month. He was much discoloured and putrified. enormously blown under the skin. I have before on two occasions met with cases where one foal or calf has died sufficiently early for putrefaction to set in and with a live calf or foal as its companion.

Castor Seed Poisoning.

History.—A haulier had received a fresh supply of corn on a Saturday and he owned seven or eight horses. The next day (Sunday) three of them were taken ill. I was called in and found all of the horses off their food.

(*a*) A cart horse that had been used for drawing trucks showed the following symptoms:—Temperature 104°; pulse 70; respiration greatly increased; sweating; diarrhœa; injected mucous membranes and great nervous excitability. He would lie down and groan in great pain, and died during the day.

Post-mortem.—This was conducted with my friend, Mr. Perry, of Cardiff, when we found acute congestion

of large and small bowels. There was also gastritis present.

(*b*) Another horse showed temperature 103°; pulse 50; excitability increased on being walked out. He moved in a peculiar, disorganised manner; first the fore-limb would be jerked forward and a person leading the horse would be liable to be struck with the limb, then a hind leg would be flexed, somewhat as in stringhalt. On excitement, such as was produced by attempting to drench, she would blunder uncontrollably forward. She recovered.

(*c*) A pony used for trap work showed symptoms similar to the first case. There was profuse diarrhœa and nervous excitability. She got down in the stall and was unable to rise.

(*d*) The other horses gradually recovered their appetite and went to work.

Mr. Perry and I suspected poisoning and we examined the corn. Castor oil beans, split, were very evident; there were also other seeds which we could not name. We submitted a sample of the corn to Sir John M'Fadyean together with the history of the case. He kindly reported his opinion that it was a case of castor seed poisoning.

During the week I was called to a farm to see a showman's horse that had been found ill that morning in a field.

Symptoms.—Profuse sweating; temperature 104°; anxious look; nervous excitability; a peculiar short respiration at intervals—something like respiratory paralysis; sighing at times.

At first I did not know what to make of the case, and, suspecting poisoning, asked several questions. I had known the farm for several years, but had never met with a similar case. At last I asked the owner if he gave the animal any corn at grass. He said he bought 4lb. of corn from a shop in town the day previous and produced a nose bag containing corn and chaff. I found castor oil beans in that sample, and the shop was owned by the miller who supplied the corn to the other cases. This animal died during the day.

Post-mortem.—This revealed a similar condition to that found in the previous cases. Treatment was mainly directed in keeping all food away from the animals. Only a little water was allowed and quietness enforced. To the horses in the stalls I gave injections of strychnine and morphine; we could not drench the animals owing to their excitability.

The corn merchant stated that he had mixed two sacks of castor oil beans with twenty sacks of mixed corn.

An Outbreak amongst Pigs.—Whilst on the subject of castor poisoning I remember having to investigate a case of supposed swine fever in pigs. A ship-owner had taken a farm outside the town and had placed a bailiff to look after his stock.

On arriving at the farm I found several store pigs ill, particularly affected with diarrhœa and dysentery. I noticed the pigs on the farm were not similarly affected, yet they had been in contact with the pigs affected. Questioning the bailiff as to feeding, he said they had recently had some ground corn which came from a ship. They were sweepings and the pigs were purchased to eat up this meal. I examined the corn and could detect castor bean frequently through the sample.

I killed three of the worst affected pigs and they showed gastro-enteritis and blood-stained fæces. I do not know if all the pigs that had eaten the food died, but I believe that all those pigs I saw ill did succumb.

Discussion.

The President: Referring to the dislocation of the neck case, this recalled to my mind the case of a colliery horse, which struck its head against a beam, causing but an abrasion of the forehead, yet a dislocation of the neck, the convexity being on the offside. On manipulation no difficulty was experienced in reducing it, but on pressing from the off side a dislocation to the near side could be effected. Without causing the animal any apparent discomfort one could at will, with slight pressure, produce a dislocation to either side of the neck. Was this condition due to a disturbance of the central nervous system, from shock or slight hæmorrhage, causing a paralysis of the cervical muscles? The neck was fixed by means of an iron splint, and in three weeks' time the horse was normal, and again fit for work, and was working to this day.

Major Taylor (Bath), referring to the case of drinking diabetes, said that supposing it was not due to a tumour on the brain, it was a pity the liver was not submitted to the laboratory for examination, as it might have thrown more light upon an organic cause. Whilst practising in Dorset he recalled a case of dislocation of the cervical vertebræ which presented symptoms similar to those described by Mr. Hobbs, and a fortnight ago a nine months old puppy which had been run over by a wagon was brought to him presenting the following symptoms:—The wagon wheel had evidently crushed the near side of the head. The eyelids were closed, and the nature of the breathing made him think that the throat was also paralysed. He could detect no injury to the lower jaw, but found that the near side of the superior maxilla was crushed to fragments. After removing two teeth and several pieces of bone, he strapped the jaws together and advised artificial diet, etc. On calling three days afterwards, when he expected the dog to be dead, he found it very much alive, and on removing the straps was surprised to find it could move the jaws and partially open the eyes. He ordered the straps to be kept on, and the dog was brought to him the previous day to that of the meeting, perfectly recovered, with the exception of a depression on the side of the jaw and slightly rattling breathing from stenosis of the larynx. It could use both jaws, was eating hard food, and appeared in good condition.

Major Taylor described another case of a pony that was cast during the night by the halter chain, and turned a somersault under the manger. Upon attempting to raise the animal, and stretching his

head, he came over backwards. He was put in slings, and remained there for two weeks, but was subsequently destroyed as no motor power was re-established. Another case was that of an animal which, whilst in harness, fell down a quarry and twisted its neck. When seen his head was swinging helplessly round to the side, but the animal could walk in a staggering manner, and, with the neck straightened, could walk almost normally. He placed thin boards on each side of the neck, and bandaged them in position to keep the vertebræ in normal alignment. The pony remained like that for three weeks, and, on the splints being removed, he gradually recovered muscular power by massage, etc., and was now at work. The case of azoturia was most interesting. He thought they were very much in the dark about the pathology and treatment of this disease. The speaker mentioned being in charge of some horses at a recent Government camp, and discussed one which was kicked in the fore-arm and below the knee, inflicting several small punctured wounds. He was apparently fit to proceed from camp and travelled without any sign of lameness, and arrived at his destination sound, but a few days later the speaker received a telephone message saying that the horse had collapsed at exercise with a compound radial fracture, which must have been in existence before leaving camp but was not capable of being diagnosed in the greenstick stage.

Referring to the case of the cow mentioned by Mr. Hobbs, he would have been tempted to perform an operation, and, as the case turned out, would have made a mistake. In regard to the kitten with the hat-pin in its body, Major Taylor said that he had had several cases of the kind. On one occasion he had to open the intestine to get to the head of the pin. How Mr. Hobbs removed the hat-pin by pulling on the point was rather puzzling unless he pulled it through a hole in the diaphragm.

Mr. Hobbs: I discovered the point and by pulling it came away without difficulty through a small incision in the skin.

Major Taylor asked Mr. Hobbs why he injected strychnine and morphia in combination, and Mr. Hobbs replied that he could not think of anything better at the time.

Mr. Arnold Roberts (Chepstow), said he was very interested in the description of fern poisoning, because he, unfortunately, had between twenty and thirty cases each year, and he had a fair percentage of recoveries. In cases occurring a few weeks after eating ferns, the symptoms were very much as described by Mr. Hobbs. There was a park two miles from Chepstow, and the first time he examined a yearling he rather suspected anthrax. He had cases occurring in animals three weeks after their removal from the park, and they were the only cases with which he had any luck. The treatment had been much the same:—Sour milk, calcium lactate, and chlorodyne.

Passing to choking, Mr. Roberts related a case where a man fetched a horse from a field and tried to put the collar on. The head was elevated, and whilst the collar was being put on, the horse fell, and on trying again the same thing happened. The horse started coughing and foamed at the mouth. The speaker got there and tried to move an obstruction, and then he thought to cut down on it. Just as he was getting ready the animal coughed a great many times and coughed up the stone (produced). It seemed almost incredible that the animal could have done it.

In another case he was called to see a horse which had been off its feed slightly. He examined the mouth and found the teeth like a switchback. He then removed the elongations, but it would not start feeding and became too weak to get up. There was no pain, but the animal died during the night. He was very interested in this case and subsequently made a *post-mortem*. What he found were the two pieces of wire (produced) in the gullet. The teeth were in a shocking state.

With regard to azoturia, he had had three cases in eighteen months and all recovered. He employed an American treatment, as follows:—

Bottle A.
Oxalic acid, gr. 64.
Distilled water, oz. 2.

Bottle B.
Oxalic acid, gr. 64.
Citric acid, gr. 64.
Distilled water, oz. 2.

The dose of either "A" or "B" was one dram every hour in a pint of water.

Bottle "A" was given first. If the horse was not on his feet one gave the contents of bottle "B."

In addition to the above it was advisable to give a hypodermic injection of arecoline (gr. 2) or physostigmine (gr. 2).

With regard to injury of the tibia, he thought this should be treated with care. He had had several cases. He was very interested in fern poisoning, and would be glad to hear of any treatment. Mr. Talbot, the licensee of the George Hotel, Chepstow, had a number of cattle at Beachley, and sent to him to say he had seen a number of cattle drinking salt water. One was dead and several dying. He went out and diagnosed lead poisoning. The symptoms were extreme excitability, constipation and sub-normal temperature. He lost seven cattle, and an equal number were saved. On inspection they found a quantity of white lead which the Government had left behind. The treatment adopted was the administration of large doses of magnesium sulphate and stimulants.

Mr. Hall (Barry) said he had had some experience of fern poisoning. What amazed and interested him was the fact that there were numerous cases where animals ate it without the slightest ill-effects, which made one ask the question whether it was really the fern or something on it that caused the poisoning. They would see dry bracken eaten without any effect upon the animal, yet in other cases they had what was called fern poisoning without the slightest pos-

sible hope of recovery. Some time ago he asked Mr. Perry to consult with him in investigating a case of an animal which had died, presumably, from fern poisoning. Mr. Hobbs had aptly described the symptoms. The fern was found in the shooting stage and not advanced in growth, and the question that arose was whether it was due to any particular stage of growth or to a particular fungus. Personally, he did not think it was the fern itself, and as to treatment he did not think he was able to enlighten them. With regard to the case of a fractured jaw, that was interesting. He had a case a fortnight ago affecting a fine, upstanding shire filly housed with another colt. There was no history and the only thing they found was that one morning it was bleeding profusely from the mouth, and he was sent for. When he arrived he discovered that the whole of the maxilla was pointing out towards the roof of the mouth. He placed the broken jaw into its place and taped the fracture under the upper lip and got it into position as well as he could. He kept it under observation for three days, and left Nature to do the rest. He was pleased to say that the animal made an excellent recovery. As to fracture of the first rib, would one always diagnose new cases where they had flexion of the lower joints? He thought it was going to extreme measures to say it was a fracture of the first rib.

With regard to damage to the penis, he had a long job of the kind. The organ was an enormous size and did not respond to any reasonable sort of treatment. The best form of sling, he found, was to adapt one to the contour of the abdomen in the shape of a pig net, the meshes of which conformed to the peculiar movement of the abdomen, and kept the penis in proper support during the whole of the period whilst it was in position. As to choking, only the day before he was called to a case of partial choking in a cow, and he could feel the apparent obstruction just before entering the rib, but the amazing part of the case was that the animal had taken its feed for the past fortnight to a moderate degree. He found he was unable to remove the obstruction, but discovered at the end of the probang a mass of dry pieces of cake. He got the animal to drink, and put him on chloride of soda and extract of belladonna to help to relax the mustles. He did not know what the result would be.

Referring to poison in pigs, the speaker said that about a month ago a man came to him and said his pigs had been poisoned. Asked how he knew, he said they had dipped the sheep and left a portion of the preparation (Cooper's) on ground upon which pigs were running. He told him he would probably find them all dead. He (the speaker) went off and prepared a solution of ordinary washing soda and ferri perchlor. He made a further visit the next day and found them staggering, livid and cold. He started to dose them and all recovered except the one which he found dead.

Mr. WATSON (Thornbury) said the only case of a broken jaw which came under his notice was in a horse which would rush out of the stable. The farmer placed a ring round the lower jaw and tied it to a post. The horse made a rush and stopped. On being told he had broken his jaw, the owner replied, "Yes, but I have stopped him from going through the door." (Laughter.) With regard to fractured tibia he was always very careful, owing to the bad luck which he had had. When he had a case he always tried to advise the owners to shut them up. He thought it was often a case of blood clot forming in the fracture. In the case of a fractured rib he always preferred to give the case a chance.

Concerning choking in the cow, Mr. Watson said he thought pressure through the stomach had a great deal to do with keeping an obstruction in the throat, and as soon as the pressure was relieved it gradually passed the thing down. In a case where it was hard and he was unable to remove it he tried belladonna and linseed oil.

Mr. PERRY (of Bristol) said the paper was a practical and interesting one. With regard to the case of the kitten with a hat-pin, he had a similar case not long ago. It was pierced in the neck. He cut down and came across the point of the pin, but it would not come. He turned it round and pushed the head of the pin through the mouth, when it came out quite easily. In connection with choking, he had an interesting case some time ago. He was called to see a horse which showed symptoms of breathing quickly and bleeding at the nose and mouth, but he could not make it out. He came to the conclusion that it was a fractured rib, and that the hæmorrhage was from the lung. It was destroyed, and, on making a *post-mortem*, he found the portion of a monkey tree (produced) in the trachea. It was afterwards ascertained that a hedge had been mended with a monkey tree, and the animal was known to have eaten it, but, he asked, how did he get it down? The result of the law case was that the owner lost the action against the man who mended the hedge, it being held that it was an act of God, as a monkey tree was not poisonous. Had the animal been poisoned he would have had a good case, but what happened was that, in swallowing, it went the wrong way. Mr. Perry went on to say that he had had several peculiar cases of fractured tibia. One was a case where a horse had been kicked and a fortnight later went aff to work, and the bone fractured like a cannon. He was very careful in those cases to try to rest them, because it was impossible to diagnose a fracture at the time.

Mr. AVESTON related a somewhat remarkable experience with a small cat that was brought to him as it was unable to swallow. On making an examination of the neck a sharp point could be felt under the skin; in using pressure it came through, and steady traction revealed to view a hat-pin some nine inches long. As the head would not come, a small incision was made through the skin and œsophagus, and out came the hat-pin. The hat-pin was almost as long as the cat. If the cat had been taken to a hospital it would have been in all the morning

papers, photos complete, and its removal hailed as a wonderful feat. He had seen several such cases recorded in the daily press which had made a big impression upon the public mind, and he considered the time had arrived when they should be informed of the remarkable things done by veterinary surgeons. (Hear, hear.) The day of hiding their light under a bushel had passed, he hoped, for ever.

He was recently called to see a cow that was supposed to be unable to calve. In making an examination he found the *os* dilated and a quantity of after-birth hanging to the hocks, but no calf in the womb. He told the farmer that the cow had already calved, as the uterus was empty and the animal perfectly happy and eating. So out to the field to find the calf they all went, as she had just been taken to the cow-shed. Every ditch was examined most minutely, but no calf found. The farmer blamed some pigs for the disappearance. All was perfectly normal; there was no pain in eating, and she was chewing the cud till the third day, when he was called, to find her *in extremis*. She died the same evening.

Post-mortem revealed rupture of the anterior part of uterus and small calf lying amongst the intestines.

Two cases of choking, where the aid of skilled advice was delayed, had come under his notice; in each case the obstruction could be felt half-way down the neck, but could not be moved by any means. In each case a local anæsthetic was injected and the obstruction cut down and removed.

Both animals—a Sealyham terrier and a Shorthorn yearling—had the wound dressed; no sutures were used, the amount of food escaping diminished rapidly, and in about a week the animals appeared quite recovered.

All was well for several months, when difficulty was noticed in swallowing and very soon this was almost impossible, and the owners, knowing the history, had them put away.

Speaking of dislocation, Mr. Aveston said that some ten years ago he was called to see a hunter that had fallen jumping a fence, and on rising was unable to lift its head higher than parallel with its withers. No pain or swelling could be found anywhere, and in spite of trying many treatments no improvement could be seen in a fortnight, so the owner suggested turning the animal out to grass, and it was sent out at once. On being loosed it began to gallop; very soon it fell and turned almost a somersault. The end, they thought, had come at last, but, on getting up, the animal was absolutely normal and no further trouble ensued.

Mr. A. S. Adams (Dursley) brought forward a case of obstruction in a hound, and another concerning the action of soda as an emetic. (These cases appear in our Clinical column.—Ed.)

Mr. W. R. Williams (Bridgend) said he often thought, if he had a chance, he would ask members if they had been successful in being able to dilate the os uteri and procure abortion.

The Reply.

Mr. Hobbs thanked the members for receiving his remarks so courteously, and was glad they had brought about a discussion. Personally, he had learned much. Replying to the point raised by Mr. Williams, Mr. Hobbs said he had never been able to get at a calf except by the use of the knife. That had produced a fair amount of success. With regard to the kitten, he took hold of the point of the hat-pin and kept pulling until the knob appeared. The case of drinking diabetes was not sufficient for him to send it away, and with regard to the fern poisoning, the extraordinary thing was that it should occur three weeks or a month after the animals had eaten it. Whether it was a parasite on the fern he did not know. They had the cattle watched and saw no symptom before three weeks.

At a recent humane killer demonstration at Folkestone Colonel Broome Giles, C.B., J.P., had a somewhat unpleasant experience. A bullet passed obliquely through the lamb's head, and, glancing either off the jaw of the lamb or the iron rim of the drain, passed over the gallant gentleman's left shoulder.

For a period of forty-one years at the Smithfield Club Show, taking the year 1832 as a start, Southdown sheep gained the championship some forty times. In the period 1869-1921, out of fifty shows, the breed won twenty-three times. During eight years the supreme championship at Smithfield was won five times by Southdowns, a record unapproached by any other breed, while time after time the carcase competition has gone to the breed with much regularity.—*Daily Telegraph.*

Carman Sent to Prison.

When Edward T. Blake, a young carman, of Staple Street, Bermondsey, was charged at the Guildhall on November 29th with cruelty to a mare, a veterinary surgeon said that the animal had been shamefully treated. There were marks on its sides showing that it had been flogged unmercifully during the previous forty-eight hours. The mare was over twenty-five years old and was half-starved and lame all round.

Alderman Sir Harold de Courcy Moore sentenced the defendant to seven days' imprisonment with hard labour, remarking that he could not treat poor dumb creatures in this way and get off with a fine.

London R.V.C. Football.

The Association first team entertained University College Hospital at Chiswick, on Wednesday, and lost a hard and enjoyable game by 3 goals to 1.

The College were unlucky in being three goals down within fifteen minutes, and later showed themselves to be more than equal to their opponents, who were on the defence for the greater part of the second half.

The second eleven lost their match with Tollington School (away) by 7 goals to 2.

The Veterinary Record.

9th December, 1922.

TUBERCULIN.

The President of the Dumfries and Galloway Veterinary Medical Association, in his address to the members, touched upon several subjects of considerable interest to the profession. One in particular is at present causing much perturbation, namely, the unrestricted sale of tuberculin. He is reported as having said: "Nearly every herdsman tests his own cattle, and the sooner tuberculin is restricted to the profession the better, thereby stopping the so-called 'faking,' which not only renders a pecuniary loss to the purchaser, but casts a slur on the reputation of the veterinary surgeon who granted the certificate." There is a general feeling among members of the profession that something should be done to prevent the possibility of such a fraud being perpetrated. There is often reason to believe that the unreliable results which are obtained from time to time, and which have been experienced by most practitioners, especially those who test pedigree stock for export, may be due to previous doping by unscrupulous persons. How often it has happened that, after having given a clean certificate the practitioner has been dismayed to find that the animal has reacted when tested at its destination, with the result that both the veterinary surgeon and the tuberculin which he employed are brought into disrepute. Some instrument makers supply a syringe and tuberculin, and give full directions as to their use to anyone who is prepared to pay for them. Pressure should be brought to bear on the responsible authority with a view to the standardisation and restriction of sale of tuberculin. Professor Wooldridge, we believe, dealt with this matter in a paper before one of the societies some years ago. At the present moment the Minister of Health is endeavouring to ensure a clean milk supply, and the time appears to be opportune for again giving prominence to this important matter.

We would suggest that if it has not already been done, the Dumfries and Galloway Association should forward a resolution to the Council of the N.V.M.A. urging them to take action. Pious wishes which so often emanate from societies are of little service. Definite proposals are what the parent body needs. Then perhaps the Branches and Divisions will realise that they have in the N.V.M.A. a live body, ready to act and worthy of their utmost support.

Clinical and Case Reports.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases

Prostatic Cyst in a Pekinese Dog.

By Professor G. H. Wooldridge, Royal Veterinary College, London.

A male Pekinese, four or five years old, was brought into the College clinique with a history from the owner that he was badly constipated and had not passed any motions for some days. On examination the dog was found to be straining as though to evacuate the rectum, and made his abdominal wall very tense at first, thus rendering palpation somewhat difficult.

After a little careful handling, however, he relaxed his abdominal muscles and palpation then failed to reveal the existence of any ingesta in the intestines. Immediately in front of the pubis, however, and extending about two to two and a half inches forward, could be felt a circumscribed body which was thought to be the bladder.

On examination *per rectum*, no fæces could be found, and towards the brim of the pubis a body regarded as the prostate, slightly larger than normal, could be felt. Pressure on the bladder failed to cause a flow of urine. The dog was then placed on his back on the operating table and a catheter passed. No urine could be drawn off with the catheter, nor did any follow its withdrawal. There was, however, a few drops of turbid, viscid liquid, suggestive of prostatic fluid.

Positive diagnosis could not be made, though it was suspected that the bladder was the seat of the trouble. An exploratory laparotomy was, however, recommended and the consent of the owner was obtained, together with permission to proceed with any further operation which might be found desirable or necessary.

The dog was anæsthetised with a mixture of chloroform two parts and ether three parts, the abdominal wall shaved and disinfected and an incision about three inches long made, under antiseptic precautions, through the abdominal wall towards the right side of the prepuce and extending about an inch in front.

The circumscribed body which had been felt was then brought into the operation wound and examined. It was thereupon found to be hollow, having a dense wall, but it did not give the appearance of consisting of bladder. A further search was made, and a small empty bladder was found lying on its left.

The abnormal structure, on being traced, was found to run into the prostate at the neck of the bladder and the diagnosis of prostatic cyst was then made. The cyst was punctured with a small trocar and cannula and evacuated of its contents, after which an incision was made and a portion of the wall removed, the wound being sutured first with simple interrupted sutures. A row of sutures was next placed through the peritoneal coating and the

sutured edge inturned, the abdominal wall sutured and the wound painted with weak tincture of iodine.

The patient stood the anæsthetic and the strain of the operation better than was anticipated from its weak condition. All seemed to go on well during the following 36 hours, when the patient suddenly collapsed and died.

On *post-mortem* examination one rather feared that some peritonitis might be present, even though the interval after the operation was so short. The peritoneal cavity, however, was found to be perfectly normal, and the operation wound in the cyst was healing apparently favourably. There was nothing in the abdominal cavity to account for death.

On examining the heart, however, the auriculoventricular valves of both sides were found to be thickened, whilst those on the right side of the heart were somewhat distorted. The heart itself was distended with blood. Presumably death had occurred from heart failure.

On making a further examination of the prostate it was found that the left half of the gland was apparently normal, while the anterior portion of the right half had, for some reason, become distended with prostatic fluid, forming, virtually, a cyst.

The presence of this abnormal body at the entrance to the pelvis, causing pressure both on the bladder and on the rectum, was responsible for the frequent and almost continuous straining on the part of the patient—which was interpreted by the owner to indicate constipation.

Obstruction in a Hound.

By A. S. Adams, M.R.C.V.S., Dursley.

(Presented to the Mid-West and South Wales V.A.)

This hound, with others of the pack, was cub hunted on 27th August, 1922.

Several foxes were killed and eaten. Returned to kennels and all hounds fed.

An hour afterwards, one bitch noticed uncomfortable and in pain. She endeavoured to be sick and a little fluid was returned. During the afternoon, apparently got worse. Huntsman administered a dose of castor oil.

August 28th. Bitch still in pain. Vomition of watery fluids. No appetite. Given second dose of castor oil.

August 29th. Condition the same as the preceding day. No motion from bowel. Third dose of oil given. Enema of soap and water.

August 30th. Condition grave. Huntsman located a hard swelling in abdomen; suspected a bone.

I visited and examined the bitch; could not at first locate the solid substance, but subsequently did so. Opinion expressed that it was not a bone because of its shape, but a solid obstruction of some kind. Instructed that repeated enemas should be given every two hours, with glycerine. This was done and next morning the stone (produced) was passed.

I bring this matter before you, deeming it unusual and of probable interest to you, and the following points arise:—How was the stone picked up? This might have been done while breaking up the quarry, or the hound, while going home, might have picked up the stone and if a whipper-in noticed her lagging, he might have corrected her by cracking his whip and the stone was thereby involuntarily swallowed. The second point of interest is, that only one motion was passed from the 27th August to 1st September, and that could have been the only food in the alimentary tract when this hound returned home from hunting; this, to me, being new information.

This stone is two and a half inches in length, irregular in shape and nearly four inches in its widest circumference, and is one of the ordinary road metal stones, which are not locally quarried.

Immediate recovery was made and the bitch was again hunting in seven days.

Soda as an Emetic.

By A. S. Adams, M.R.C.V.S., Dursley.

(Presented to the Mid-West and South Wales V.A.)

While hunting with the local pack of fox hounds, a hound was seen to be ill, with symptoms of strychnine poisoning, immediately after drawing a cover. An emetic of mustard and water was immediately given, followed by a second—without result. As the hound was getting rapidly worse, the huntsman strongly suggested washing soda to produce the desired result. Several crystals were obtained at the cottage near by; two oblong crystals, an inch long, were forcibly pushed down the hound's throat, with immediate results, the vomition consisting of several portions of meat, which subsequently proved to contain strychnine. The immediate action of the soda as an emetic greatly impressed me, and I thought that this case also would prove of interest to you, as in future, in poisoning in canine practice, it will be the first emetic that I shall use. I may add that this hound subsequently made a rapid recovery.

Presentation to Mr. L. Lyne Dixson, M.R.C.V.S.

At the annual dinner of the Isle of Thanet Coursing Club, held at the Queen's Hotel, Margate, on Tuesday evening, November 21st, at which over 300 ladies and gentlemen sat down, a very handsome engraved solid silver salver was presented to the Hon. Secretary and Treasurer (Major L. Lyne Dixson, M.R.C.V.S.), together with a purse of fifty guineas for his valuable services and the great interest evinced in the welfare of the club. The toast of his health was drunk with musical honours, and Major Dixson suitably responded.

Association Report.

Mid-West and South Wales Veterinary Association.

The quarterly meeting of the Mid-West and South Wales Veterinary Association took place at the George Hotel, Chepstow, on Thursday, October 12th, when the President (W. D. Rees, Esq.), presided over a good attendance of members, those present being Messrs. A. S. Adams, W. R. Watson, C. E. Perry, R. W. Hall, A. E. Roberts, E. Philip Evans, J. L. Perry, G. L. Harber, H. J. MacLaren, F. J. Moon, F. J. Taylor, J. T. Margarson, B. Sayer, H. Robinson, S. B. Clode, R. Moore, M. E. Williams, W. R. Williams, J. T. Brain, F. Hobbs, J. R. Barker and the Hon. Secretary. There were many apologies.

The minutes of the previous meeting were read by the Hon. Secretary (Mr. J. J. Aveston, Bath), and confirmed.

Mr. J. T. Margarson, of Stroud, was unanimously elected a member of the Association.

Mr. F. C. Hobbs presented a paper concerning "Clinical Reminiscences," which produced a good discussion.

(Mr. Hobbs' paper, together with the ensuing discussion, appears elsewhere in the present issue.—ED.)

The PRESIDENT, moving a vote of thanks to Mr. Hobbs, expressed gratitude and thanks to him for his paper. This was carried by acclamation.

BENEVOLENT FUND.

The SECRETARY reported the receipt from Mr. Adams of £12 towards their Benevolent Fund. To date £82 had been subscribed, £5 donation given to the Veterinary Benevolent and Mutual Defence Society and there was £77 in hand. Mr. Aveston added that the Fund was sadly in need of money and never more so than at the present time. They were very grateful to Mr. Adams for his great interest in the Association and especially in the Benevolent Fund. He gave notice to move at the next meeting that ten guineas be sent as a donation to the Victoria Benevolent Fund.

Mr. Adams explained that the money was earmarked for benevolent purposes, and that when a case arose the Secretary would call a meeting to deal with it.

The following were elected as a sub-committee to deal with any necessitous cases:—Major Taylor, Mr. Perry, Mr. Aveston and Mr. Adams.

The PRESIDENT said he was in London recently, attending the Council Meeting, and was astonished to find that 400 members who received the *Record* had not yet paid their subscription. Another matter the Council wished them to discuss was in regard to the future of the profession, and the hope was expressed that the Associations would take an interest in the question and send their representatives with the united opinion of the members.

After some conversation it was decided to hold the January meeting in Bath, when Mr. W. M. Scott will read a paper on "Pathological and Therapeutical Elementals: their Application in Practice."

This concluded the meeting, and the members present afterwards partook of tea at the invitation of Mr. Arnold Roberts, of Chepstow, who was heartily thanked by the President for his kindness in entertaining the members.

J. J. AVESTON, *Hon. Sec.*

Development Commissioners and Animal Diseases Research.

In their report for the year ended March 31st, 1922, the Development Commissioners discuss at length the question of research in animal diseases. The report points out that the chief conclusion of the Advisory Committee inquiry was that the attention now being given to this subject was altogether inadequate. The economic position of the veterinary profession and its meagre emoluments as compared with that of medicine was one cause of this, and another was insufficient support from the State. "The taxpayer," the report continues, "contributes with least protest to those objects like medical research, which may contribute some direct benefit to himself." He does not realise that the amalgamation of animal disease would benefit him in a great degree.

Even more striking is the lack of interest shown by farmers and breeders of stock. Their support for the investigator of animal diseases in the past has not been of a kind calculated to enlist the enthusiasm of the urban taxpayer, who is summoned to their aid. The townsman is told that the value of British livestock may be as much as £400 or £500. He is constantly reminded of the high quality of our livestock, and of the farmers' pride in that quality. He knows, too, that behind our livestock questions are powerful interests and cross interests, for his daily papers find much room for the discussion of livestock policy, and political controversy on cattle importation overflows from the Houses of Parliament to the "non-political" platforms of guildhalls.

It is again evident to the urban taxpayer that money is not lacking where stock improvement is concerned, for his newspapers inform him that over £1,000 per head has recently been paid for 100 specimens of a favourite breed. The reluctance of the man in the street to contribute towards a remedy for those conditions, which in the view of the Advisory Committee constitute a "national disgrace," is more easily understood than the past failure of the man on the land to give adequate support to investigation.

In this connection the Commissioners welcome the example set by Scotland, where an association has been formed for promoting research into animal disease. A maintenance grant of £2,300 in aid of the first year's work of the association was sanctioned without prejudice to the question of an annual grant.

On account of the continued disturbed state of Ireland, not a few horse-breeders in England are of the opinion that the National Stud now at Tully should be moved to this country.

Abstracts and Reviews.

Camel Surra.

(*Continued from page* 882.)

Transmission of Camel Surra.—For surra to spread three factors are necessary :—

(1) The reservoir (*i.e.*, a surra-infected animal).

(2) The transmitting agent.

(3) Healthy animals susceptible to the disease.

If either of these factors is wanting, the disease cannot spread. If, however, these three factors are present, the disease can be transmitted from the surra-infected camel to the healthy by two methods :—

(1) By direct transmission.

(2) By indirect transmission.

Direct transmission.—In this method we have ascertained that the disease is carried direct from the infected animal to the healthy through the agency of certain tabanidæ, and it would appear that direct transmission depends upon—

(1) the feed on the surra-infected animal being interrupted.

(2) the interval of time between the interrupted surra-infected feed and the feed on the healthy animal.

(3) the number of trypanosomes in the peripheral circulation of the surra-infected animal at the time the flies are feeding.

(4) the number of flies : the greater the number of flies that are interrupted in their feed on the infected animal and finish their meal on the healthy, the greater the chance of transmission.

It has been experimentally proved that the following tabanidæ are capable of direct transmission of camel surra :—

1. T. nemocallosus.
2. T. rubidus.
3. T. hilaris.
4. T. albimedius.

Of these T. nemocallosus gave the largest number of positive results, while T. albimedius (though a large number of experiments were carried out) gave the least number of positive results. As the result of these experiments Tabanus nemocallosus must be considered of great importance in the direct transmission of surra.

In T. nemocallosus the trypanosomes remain alive within the gut of the fly for four hours only, whereas in T. albimedius they remain alive for eight hours, and in biting muscids (*e.g.*, Philæmatomyia insignis, stomoxys calcitrans) from 20 to 30 hours. In this connection it is worthy of note that in our transmission experiments the largest number of positive results were obtained with T. nemocallosus, the smallest number of positive results with T. albimedius, and none with biting muscids.

Indirect transmission.—Many experiments were carried out in connection with the indirect transmission of surra with different species of tabanidæ and fleas (ctenocephalus felis), but in no case was a positive result obtained. The interval of time between the first full meal of the infected animal and the meal on the healthy animals varied from 2 to 29 days. Experiments were also carried out to determine whether the infection could be carried through eggs, but no positive result was obtained. It is improbable that there is any life cycle of the trypanosome in tabanidæ. Camel surra is transmitted only under certain circumstances by direct transmission, and never by indirect transmission by tabanidæ ; if this were not the case it is difficult to understand how any camel in India could have escaped infection. During our investigations on surra we came to the conclusion that the spread of surra cannot only be confined to the winged and comparatively short-lived insects or flies, but that those insects or arthropods which can survive for more than a year must have some bearing upon the spread of the disease.

Experiments carried out with a species of ornithodorus (specimens of which were sent to Professor Brumpt, of Paris University, for identification ; he pronounced them to be a new species and proposed the name Ornithodorus crossii) definitely proved that this species of tick is capable of transmitting the disease.

These ticks transmitted the disease to healthy rabbits 67, 83 and 101 days after feeding on an infected surra animal, but they were not infective after 1 minute to 46 days. This would apparently show that there is a life cycle of the trypanosome within the tick.

Other species of ornithodorus may possibly also be found capable of transmitting the disease.

The fact that this new species of ornithodorus is capable of transmitting surra after a long interval between feeding on an infected animal and a healthy animal may account for surra breaking out yearly or periodically in the same stables and in the same districts, though cases of surra have not been imported into these stables or districts. Through the agency of these ticks the disease may be carried over from year to year.

The fact that surra makes its appearance during the hot and rainy months may be due to the fact that these ticks hibernate during the cold months, and are most active during the hot and rainy season ; as soon as one animal becomes infected through the agency of ticks the disease can be rapidly spread by direct transmission through the agency of certain tabanidæ (for full details of transmission experiments with tabanidæ and ticks reference should be made to Veterinary Bulletins of the Department of Agriculture, Punjab).

Prevention of the Spread of Camel Surra.

For the spread of surra three factors are necessary—

(1) The reservoir.

(2) A transmitting agent (tabanidæ, ticks and probably other blood-sucking insects).

(3) Healthy animals.

The broad principles of prophylaxis consist in—

(i) getting rid of the reservoir.

(ii) destruction of the fly, or adopting such measures as will prevent the flies from biting the healthy animal.

I.—*Getting rid of the reservoir.*—The reservoir may be—

(*a*) surra-infected camels, horses, cattle, goats, sheep and dogs and, as has been shown (*vide* heading "Mode of transmission of surra"), ticks.

In the case of camels, horses and dogs, the presence of the disease can be ascertained by the microscopical examination of the blood ; infected camels must be

isolated and treated by tartar emetic, and horses and dogs destroyed.

In the case of cattle, goats and sheep, the diagnosis can be made by the injection of a small quantity of blood (1 c.c.) into white rats: infected cattle should be treated by tartar emetic, and goats and sheep destroyed.

Sheds in which surra has broken out and in which any ticks of ornithodorus are found (special search being made in the crevices of the walls) should be pulled down and burnt and all ticks destroyed.

II.—*Destruction of the transmitting agent or adoption of measures to prevent the transmitting agent from attacking healthy animals*—(*a*) *Destruction of tabanidæ.*—Important transmitting agents, as far as it is at present known, are tabanidæ. No means for the destruction of such flies, as a practical proposition, has yet been evolved, but their number can be greatly reduced by a systematic collection of egg masses in browsing areas or encamping grounds where camels are kept. The egg masses are destroyed by certain parasites, and further researches on these parasites may result in making practical use of such parasites for the destruction of the egg masses on a large scale.

(*b*) *Destruction of ornithodorus ticks.*—The only method by means of which these ticks can be got rid of from a building is by pulling down the building and thoroughly burning. No camel should ever be kept close to the walls of a stable or shed in which goats and sheep are kept; ornithodorus are usually found in such stables and will leave their hiding places in the crevices of the walls and attack the animal.

(*c*) *Measures to prevent the transmitting agent from attacking animals.*—The only means by which camels can be protected from the attacks of biting flies is by—

(1) smearing the camel with some emulsion which is distasteful to the flies.

(2) protecting the camel with a sheet made of some light but strong material.

(3) working camels at night.

(1) The following different anti-fly emulsions have been experimented with by us:—

(1) Kerosine oil emulsion.
(2) Taramira (eruca sativa) oil emulsion.
(3) An emulsion submitted for trial by Mr. Warde, of the Indian Forest Service (this preparation had a very pungent odour and appeared to be largely composed of eucalyptus oil and turpentine).
(4) Asafætida solution.
(5) Chirpine oil emulsion.
(6) Creosol emulsion.
(7) Jensen's emulsion

Kerosine oil ...	1 gallon
Powdered naphthaline	4 oz.
Soap	1 lb.
Water	4 gallons

(8) Citronella oil.
(9) Aniseed oil.
(10) Codliver oil.
(11) Castor oil.

Of all these preparations the only one that prevented tabanidæ from attacking for any length of time was castor oil, but it cannot be recommended as a practical anti-fly repellent on account of the cost.

As the result of our experiments we found that—

(*a*) as soon as watery emulsions dry, they have no repellent action against tabanidæ.

(*b*) oily emulsions in a hot country cause blistering of the skin of the camel when exposed to the sun.

(*c*) taking into consideration the time it takes to smear a camel with any emulsion (whether it is applied by hand or by a spray pump) and the inefficacy of the emulsions tried, the use of anti-fly emulsions against the attacks of biting flies is of no practical value.

(2) *Protecting camels with sheets of strong light material.*—Different species of tabanidæ attack different parts of the body of the camel. The most frequently attacked portions of the body are the belly, flanks and legs. Arabs, during the fly season, tie a piece of sacking under the belly of their camels, and maintain that by this means the camels are protected to a great extent against the attacks of tabanidæ, and that thus many camels escape infection with surra. The protection of camels by means of sheets made of some strong light material is not an impossible practical proposition and is worthy of a trial.

(3) *Working camels at night.*—In passing through a known fly area camels should be worked at night when they are not exposed to the attacks of tabanidæ. During the day the camels should be encamped as far away from water as possible, and watered, in small batches, very early in the morning or late at night.

("Camel Surra," Cross, H. E., and Patel, P. G., *Veterinary Bulletin, No. 8 of 1922, Department of Agriculture, Punjab.*)

Bombay Administrative Reports.

I.—The Veterinary College.

In the course of his report the Principal, Mr. M. K. Hewlett, says:—

There were 62 students' names on College rolls at the commencement of the year. The Annual Professional Examinations for all the three classes were held at the end of April, 1921, this year for the first time. Thirty-nine students appeared and 28 passed successfully. Of the successful students, four passed the Final Examination and qualified as Graduates and left the College.

In August, 1921, 28 new students were admitted to Class A and one to Class B, and one old student was re-admitted to Class C. There were thus 86 students on the rolls at the commencement of the first session.

The results of the Supplementary and Annual Examinations held during the year are as under:—

In the final year or Class C, 27 students appeared and 19 passed; in Class B, 8 appeared and 7 passed; and in Class A, 30 appeared and 22 passed. The percentages this year for the three classes were 70·37, 87·50, 73·33, respectively, as against 77·77, 74·07 and 60·00 last year; or the total of 73·85, as against 74·57 last year.

During the year four scholars, having passed their Final Examination, left the College.

Clinical Instruction.—This was carried out as usual in the Bai Sakerbai Dinshaw Petit Hospital for Animals. During the year 3,342 in-patients and 674 out-patients were treated; a total of 4,016 patients. Of these, 725 were equines, 1,893 bovines, and 724 miscellaneous. The average daily attendance was 196.

Discipline.—The students have been well behaved, and their attendance at lectures, demonstrations and clinical classes has been satisfactory.

The Laboratory.—During the year under report 698 smears and 25 pathological specimens were submitted for examination and opinion. The following table shows the nature of disease suspected and the results of examinations :—

Nature of disease suspected.	Number examined.	Positive.	Negative.
Anthrax	83	20	63
Black Quarter	3	—	3
Epizootic Lymphangitis ...	17	7	10
Fowl Cholera	11	6	5
Hæmorrahagic Septicæmia ...	113	3	110
Johne's Disease	7	—	7
Piroplasmosis Bovis	32	—	32
Piroplasmosis Canis ...	31	1	30
Piroplasmosis Equi	4	1	3
Spirochetosis Gallinnarum ...	9	1	8
Strangles	9	7	2
Surra	323	109	214
Miscellaneous	56	6	50
Total	698	161	537

CIVIL VETERINARY DEPARTMENT, BOMBAY PRESIDENCY.

Mr. E. S. Farbrother, in the course of this report, states :—

Re TREATMENT OF DISEASE.—Contagious diseases were reported from all the districts and the City of Bombay.

The recorded number of deaths was 15,256, against 7,752 last year. The increased mortality was partly due to the greater prevalence of rinderpest, hæmorrhagic septicæmia and anthrax, and partly to the greater attention being given to the collection of accurate statistics. Village officers are still apt to neglect the reporting of outbreaks, but there are signs of increasing confidence generally and in some cases eagerness for help is displayed. Certain proposals for furnishing statistical information have been newly introduced which tend to secure more accuracy and promptitude.

During the year 2,243 outbreaks were attended by veterinary assistants and 259 by veterinary inspectors, as against 1,871 and 318 outbreaks respectively last year.

Equine Contagious Disease.

Seventy cases of glanders were reported, of which 56 occurred in Bombay City and 16 in Poona. Included in the latter figure are two cases which showed all the symptoms of glanders, but which died before the mallein test could be carried out. This was the first appearance of the disease in Poona.

Surra was the cause of 102 deaths, against the same number in the previous year. Bombay City, Thana and West Khandesh were chiefly affected.

Other diseases include four cases of epizootic lymphangitis, of which three were reported from Bombay and one from Poona, and one case of strangles from Ahmednagar.

Bovine Contagious Disease.

Rinderpest was reported from all the districts except Belgaum and Bijapur. Deaths from this disease amounted to 10,593, against 5,910 in the previour year. This disease again showed a tendency to confine itself to the Northern and Central divisions. Thana, Poona and Kolaba districts were the most heavily infected, these three districts alone being responsible for more than half the total mortality.

Foot-and-mouth disease was prevalent in all the districts except Panch Mahals, and accounted for 233 deaths out of 59,686 animals reported to have been attacked. This is the first time that this disease has been so widespread in the Presidency. In the Dharwar division alone 27,624 animals were affected and the staff deserve great credit for the manner in which they combatted the disease. It is interesting to note that in spite of the widespread infection the percentage of deaths was only 0·3, as compared with 1.6 in the previous year.

Hæmorrhagic septicæmia was reported from all the districts except East Khandesh and Bombay City. The total mortality recorded was 2,469 against 545 last year.

Black-quarter was reported from four districts and accounted for 222 deaths, as compared with 80 last year. As usual, the greatest number of deaths was reported from the Ahmednagar district.

Anthrax was reported from 14 districts and accounted for 1,096 deaths, against 404 last year. It was specially virulent in the coastal districts. Of the 148 outbreaks attended, only 18 were confirmed.

Contagious Diseases in other Animals.

One outbreak of anthrax in sheep and goats was reported from Ahmednagar district.

Pleuro-pneumonia in sheep and goats was reported from Ahmedabad district, and further investigation in this direction will be taken up soon.

Foot-and-mouth disease in sheep and goats was reported from Bijapur, Kanara and Kolaba districts.

Parasitic diseases in sheep and goats have also been reported.

Variola in sheep and goats was reported from three districts.

Fifty-eight cases of rabies in dogs were dealt with by the veterinary staff, as against 48 cases last year, and 24 brains were sent to the Bacteriological Laboratories for examination.

(*To be concluded*).

Injury to a Horse: Action for Negligence.

BROCKLEBANK v. MANTON.

(*Before* Mr. Justice Darling *and* Mr. Justice Salter.)

The appellant, Mr. George Brocklebank, appealed against a judgment of Deputy Judge Alexander at Kingston-upon-Hull County Court, by which he was ordered to pay to the respondent, Mrs. Sarah Manton, £49 damages and costs. Mrs. Manton had sued the appellant to recover £49 damages received by her through the appellant's placing a mare in a field with a horse belonging to the respondent, whereby the horse was kicked and injured.

Mr. D. N. Pritt appeared for the appellant ; and Mr. F. van den Berg for the respondent.

Mr. Pritt said that both the appellant and the respondent had been in the habit of grazing horses with a farmer. The appellant obtained a mare on approval which was warranted to him to be quiet. This mare was put into the same field as the respondent's horse, and next morning the two animals were found in circumstances which led the Deputy County Court Judge to hold that the mare

had kicked the horse and broken his leg. The Judge had then gone on to decide that if two animals were lawfully in the same field, the owner of the one was liable to the owner of the other if there was a scuffle between them and one of them was injured. If that decision were right, agistment would become impossible, for no one contemplated that that arrangement meant "one horse, one field." Moreover, the same principle might be applied to cases where both horses were on the highway or at a meet of foxhounds or in the paddock before a race.

Mr. Justice Darling: What about dogs? Suppose two persons are walking in the street each with a dog, and one dog bites the other without any negligence on the part of its owner, what would be the position?

Mr. Pritt: I suppose the same principle might be applied. In Clinton v. J. Lyons and Co., Limited, Mr. Justice Bray dealt with dogs and cats, and decided that there was no liability on the part of the owner of the winner in a combat between these animals for injuries to the loser.

Mr. Justice Darling: Another authority says, "Let dogs delight to bark and bite," and goes on to give reasons. (Laughter).

Mr. Pritt: Which were the same as those given by Mr. Justice Bray. It is another instance of harmony between literature and the Bench. (Laughter).

Counsel argued that the fact that it was known that one horse might injure another had never been used to suggest that if one did it became *feræ naturæ* to any extent. In Lowery v. Walker the owner of the horse which attacked someone who was crossing the field in which it was not only knew that it was a savage animal, but had actually put it in the field to support his contention that there was not a right of way across the field. An owner was not liable for damage committed by his horse in the absence of trespass or negligence.

Mr. van den Berg submitted that if two horses, strangers to each other, were put into a field it was a natural and probable consequence that they would either play or quarrel, and that in doing so one might injure the other. There was no reason why the owner of the horse doing the injury should not be responsible on the ground of implied negligence. Moreover, there were facts in this particular case on which the Judge might have found negligence on the part of the appellant, but there was no finding one way or the other.

Mr. Pritt replied.

JUDGMENT.

Mr. Justice Darling, in giving judgment, said that what had occurred between those two animals in the field must have happened many times, but no case dealing with the responsibility for the injuries so suffered had been submitted to the Court. He had come to the conclusion that the Deputy County Court Judge was right. Although the mare in this case was among the class of animals that were *mansuetæ natura*, she must be taken with all the infirmities of her nature. It was notorious that if a horse was in possession of a field and a strange mare was turned into it they would make the acquaintance of one another, and, in the course of that, the mare was very likely to be skittish and do what the mare had done in this case. It was not necessary to prove that the owner of the mare knew that the animal had done that sort of thing before. In Cox v. Burbidge, Chief Justice Erle said:—"If the horse does something which is quite contrary to his ordinary nature, something which the owner has no reason to expect he will do, he has the same sort of protection that the owner of a dog has." If, on the other hand, the horse did something which the owner had reason to expect he would do, that protection did not exist. What the mare in this case did was what the appellant might have expected. He should have taken steps to obviate an obvious danger. It was negligence on his part not to have warned the respondent of what he was going to do. Entirely different circumstances would exist in a case where an animal was put on a common or in a large field where there were many horses.

Mr. Justice Salter agreed, and the appeal was dismissed, with costs. Leave to appeal was granted.—*The Times.*

Notes and News.

The Editor will be glad to receive items of professional interest in these columns

Cattle Embargo Pledge.

BILL THIS SESSION.

The Government have decided to introduce a Bill to remove the embargo on Canadian cattle during the present Session of Parliament in accordance with the agreement reached at the recent conference between representatives of the Government and the Canadian Government. This statement was made by the Duke of Devonshire, Secretary for the Colonies, in answer to an interpellation by Lord Lincolnshire. "We shall make every effort to pass the measure into law," said the Colonial Secretary. "I hope before the prorogation of Parliament this long, difficult, and vexed question will have been finally, definitely, and honourably settled."—*The Times.*

Cattle Disease near Chester.

The existence of foot-and-mouth disease was, on November 29th, confirmed by the Ministry of Agriculture among cattle at Huntington, near Chester.

The usual precautions were taken to prevent the spread of the disease, and an Order has been made prohibiting the movement of cattle, sheep, goats, or swine over an area of fifteen miles radius from the infected premises.

Mr. W. Gardner's Success as Show Secretary.

The Farming News, of November 8th, contained the following:—"Few agricultural organisations in the West of Scotland have made such phenomenal progress in the course of a few years as the Monkwood and Minishant Foal Show Society. For a time it was confined to the exhibition of Clydesdale horses, but this year, with the aid of a new and energetic honorary secretary and treasurer, in the person of Mr. Walter Gardner, M.R.C.V.S., Woodside, Maybole, it has branched out in other directions. At the annual show on Saturday, there was a new feature in the form of a department for dairy produce, roots and seeds, and baking competitions, and it is safe to say that the display in the marquee set aside for it has not been surpassed, if even equalled, in Ayrshire this year. As has already been noted in these columns, there was an enormous increase in the entries, and the quality of the stock in general was of a very high order. Mr. Gardner was being heartily congratulated on all hands on Saturday on the success which had attended his efforts, and he richly deserved all the praise bestowed upon him. When Mr. Gardner set about to institute new sections, he wisely enlisted the aid of a committee of ladies to assist him in bringing together as large a display as possible of those things which go to make for the betterment of the farm home. In this he was eminently successful."

Mr. Gardner was a successful candidate at the recent Maybole Parish Council election, securing the sixth amongst eight contested seats, with a total of 559 votes.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Fasting Calf.

Sir,—In the *Veterinary Journal* for November, 1921, Mr. W. T. Hewetson, of Brampton, Cumberland, relates a case of a newly-born calf that fasted for twelve days. It was dropped on the rough fell pasture and was lost from July 8th to July 20th. Yours truly, G. MAYALL, M.R.C.V.S.

Bolton.

Re Dangerous Drugs Act, 1920.

Sir,—I was requested to kill a cat and a donkey, both in the prime of life and good health, under (1) morphia; (2) chloroform. Not knowing how much morphia to take with me, I ordered a fair quantity; it came and with it a polite note from my chemist asking me to enter it in my register *at once*, as Detective-Inspector B——— was in his shop when he was packing my parcel, and the Detective-Inspector might come on to mine at once. Well, I did not know I had to keep a register. Now, I suppose, we have to do so. But that is not my point. I want to know if I have to keep a register of every half-grain I use at home and of every half-ounce of tincture of opium I use in dispensing medicines to be sent out. If such is the case, it will take time, trouble and thought. Perhaps you will enlighten my ignorance.—Yours sincerely, H. BUCKINGHAM.

Earlham Road, Norwich,
November 20th, 1922.

As the above communication is of considerable general interest, the Editor proposes to deal with it in our editorial columns next week.

Villate's Solution.

Sir,—There is a slight error in the report of my paper in your last issue. What Monsieur Paul Dieudonné says is, "*the sulphate of lead* in Villate's solution, far from aiding the effect of the remedy, *is harmful*, etc. . . . There is every advantage in only using the solution *after it has been decanted.*"—Yours faithfully, G. MAYALL, M.R.C.V.S.

Bolton, *December 2nd.*

The Editor begs to acknowledge the receipt of the following:—Scottish Metropolitan Division Report, from R. G. Linton, Esq., Hon. Secretary. Communications from G. M. McElligott, Esq., Geo. Yates, Esq., J. Malcolm Armfield, Esq., G. P. Male, Esq., and Hamilton Kirk, Esq.

Diseases of Animals Acts, 1894 to 1914. Summary of Returns.

Period.	Rabies. Cases Confirmed. Dogs.	Rabies. Cases Confirmed. Other Animals.	Anthrax. Outbreaks confirmed.	Anthrax. Animals attacked.	Foot-and-Mouth Disease. Outbreaks confirmed.	Foot-and-Mouth Disease. Animals slaughtered as diseased or exposed to infection.	Glanders (including Farcy).* Outbreaks reported by the Local Authorities.	Glanders (including Farcy).* Animals attacked.	Parasitic Mange.* Outbreaks reported by the Local Authorities.	Parasitic Mange.* Animals attacked.	Sheep Scab. Outbreaks reported by the Local Authorities.	Swine Fever. Outbreaks confirmed.	Swine Fever. Swine slaughtered as diseased or exposed to infection
GT. BRITAIN.	No.	No.	No.	No.	No.	No.	No.	No	No.	No.	No.	No.	No.
Week ended 25th Nov., 1922...	...	...	11	11	...	...	...	...	9	9	17	52	15
Corresponding Week in 1921	...	...	6	6	...	...	...	...	15	20	15	25	5
Corresponding Week in 1920	2	...	14	14	1	...	1	1	34	49	17	23	6
Corresponding Week in 1919	...	...	8	9	...	86	...	...	76	144	7	44	17
Total for 47 weeks, 1922 ...	1	...	456	527	1134	55238	4	4	929	1305	518	1203	455
Corresponding period in 1921	22	1	440	560	43	2958	11	44	1907	2892	478	1129	418
Corresponding period in 1920	32	...	388	462	79	10502	14	23	3324	5444	386	1695	685
Corresponding period in 1919	147	5	205	272	69	3045	22	58	4489	8876	288	2113	973

NOTE.—The figures for the current year are approximate only. *Excluding outbreaks in Army horses.

IRELAND.												
Week ended 25th Nov., 1922...	...	...	...	...	...	...	Outbreaks 2	3	4	22		
Corresponding Week in 1921 ...	...	...	...	...	...	...	...	2	4	26		
Corresponding Week in 1920 ...	...	...	...	...	..	...	...	8	...	3		
Corresponding Week in 1919 ...	...	...	...	...	...	...	...	3	...	...		
Total for 47 weeks, 1922	1	1	...	...	...	...	72	189	215	1221		
Corresponding period in 1921 ...	1	1	7	77	...	...	72	244	111	566		
Corresponding period in 1920 ...	1	1	...	...	1	3	90	306	13	38		
Corresponding period in 1919 ...	...	...	..	...	1	1	134	243	30	92		

NOTE.—The figures for the current year are approximate only.

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